

REMARKS

Reconsideration and allowance of this application are respectfully requested. Claims 17-28 and 33-36 remain pending, where claims 1-16 and 29-32 were previously cancelled. By this communication claim 17 is amended. Support for the amended subject matter can be found for example, at page 4, lines 21-30 and page 5, lines 21-25 of the disclosure.

In numbered paragraph 2 on page 2 of the Office Action, claims 17-19, 21-28, and 33-36 are rejected under 35 U.S.C. §102(b) for alleged anticipation by *Molyneux-Berry* (EP 0851238 A2). Applicants respectfully traverse this rejection.

As discussed in the previous response, exemplary figures 1-9 illustrate various embodiments in which a coherent burst is emitted from a radar antenna and irreflected by objects in its path. The returns from the coherent bursts are split into two mutually orthogonal components, i.e., the in-phase (I) and quadrature (Q) components. A target helix, representing noise contamination for the return signal is imposed onto a clutter trajectory that is substantially parallel to a time axis. This helical model of the target return is fitted to the data sample from the returns. The fit to the sample data is optimized in the least squares fashion to minimize the error value. The best fit target radial velocity is extracted from the helix and outputted.

Independent claim 17 broadly encompasses the foregoing features by reciting a method extracting a radial velocity characteristic of a target. This method comprises, among other features, applying a predetermined function to I-Q returns and modifying the predetermined function based on phase and amplitude to match the sample data as a function of velocity.

Contrary to the Examiner's assertions, the *Molyneux-Berry* patent fails to disclose or suggest every element recited in Applicants' claims. Rather, this reference discloses a system in which a receiver 5 supplies echo signals in video form to a moving target indicator (MTI) canceller and detector unit 6. The MTI canceller and detector unit subtracts echo signals due to stationary clutter and slow-moving targets before thresholding the residual video to obtain raw detections of targets of interest. The raw detecting data passes to a plot extractor unit 7. This unit stores and associates raw detection data using algorithms that decide whether adjacent detections should be reported as separate targets or combined into a single detection report. Unreliable, implausible, or uninteresting detections may be rejected and the remaining "targets of interest" are reported as target plots in a data format and a coordinate system of the end user. The concept described in the *Molyneux-Berry* patent uses Doppler measurement algorithms to process a sequence of echoes returned by strikes on a target whose Doppler shift is being measured. See page 5, line 33 through page 6, line 18.

The guidance provide in the *Molyneux-Berry* patent describes conventional radar prior art techniques (i.e., receiving a set of echoes and processing them as in phase in quadrature signals) that use standard Doppler processing. None of the concepts described in this reference, however, are reasonably related to helix fitting as in embodied in Applicants' claims. For one, the *Molyneux-Berry* patent describes fitting a Doppler signal to a changed in phase, whereas helix fitting uses both phase and amplitude data to process a data signal. Under the *Molyneux-Berry* approach, one assumes whether there is no clutter contaminating the signal, and when clutter is present, a separate processing step that involves subtracting a modeled clutter

signal must be performed (see page 4, line 46 and page 12, lines 13-19). As a result, the *Molyneux-Berry* patent describes a two step approach which is exactly an approach that helix fitting replaces. The former is inferior to helix fitting in that the subtraction process distorts error measurements and results in an erroneous velocity determination. Helix fitting, on the other hand, deals with clutter and a target in a single process. This process, as embodied in Applicants' claims, is both more efficient and more accurate than conventional Doppler processing technique.

The *Molyneux-Berry* patent describes a process in which a Doppler signal is fit to a constant rate of change in phase having first removed any clutter to determine a parameter. This concept is the same as Fourier fitting, such as those used in a linear weighted moving target detector filter bank. Helix fitting, however, uses a model that incorporates clutter. As a result, all the detections in the cluster can be concatenated together to extract a more accurate range rate. These results are not possible through the techniques described in the *Molyneux-Berry* patent since it does not account for clutter in its initial calculations.

In summary, the *Molyneux-Berry* patent uses a two stage process to determine the approachable velocity of a target. There are several techniques including conventional moving target detection velocity extraction all of which suffer from the problem that the first stage used to remove the clutter returns prior to velocity extraction "contaminates" the range rate measurement. Helix fitting, on the other hand is a single stage range rate extraction process that does not suffer from such contamination and has further advantages such as range ambiguity, resolution built in. For at least these reasons, the *Molyneux-Berry* patent fails to anticipate Applicants' claims.

To properly anticipate a claim, the document must disclose, explicitly or implicitly, each and every feature recited in the claim. See Verdegall Bros. v. Union Oil Co. of Calif., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Based on the foregoing discussion, withdrawal of this rejection is respectfully requested.

In numbered paragraph 4 on page 4 of the Office Action, claim 20 is rejected under 35 U.S.C. §103(a) for alleged unpatentability over the *Molyneux-Berry* patent. Applicants respectfully traverse this rejection.

The Examiner alleges that representing a clutter signal as a polynomial function is well known and thus obvious, but fails to provide any documentary support. As a result, this statement appears to be a taking of Official Notice.

In a memo to the Examining Corps and Technology Center Directors, Stephen G. Kunin, Deputy Commissioner for Patent Examination Policy, stated that reliance on "Official Notice" when an application is under final rejection should be rare. See "Procedures for Relying on Facts Which are Not of Record as Common Knowledge or for Taking Official Notice," United States Patent and Trademark Office, memo from Stephen G. Kunin, Deputy Commissioner for Patent Examination Policy, page 2 (February 2002). Moreover, Mr. Kunin stated, "[o]fficial notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known." See Id. "It would not be appropriate for the examiner to take official notice of facts without citing a prior art reference where the facts asserted to be well known are not capable of instant and unquestionable demonstration as being well-known." See Id.

In addition, if the Examiner believes that claim 20 still read on a prior art reference, Applicants hereby request that the Examiner either:

- (a) Provide another non-final Office Action withdrawing Official Notice, and applying a suitable reference for the asserted rejection; or
- (b) Issue another rejection under an appropriate statutory provision and provide an affidavit or suitable reference attesting to all the elements taken as Official Notice.

By this reply, Applicants have timely challenged the Examiner's Official Notice.

Conclusion

Based on the foregoing amendment and remarks, Applicants respectfully submit that claims 17-28 and 33-36 are allowable and this application is in condition for allowance. In the event any unresolved issues remain, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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